



#3

SEQUENCE LISTING

C16
<110> Bron, Sierd
Jongbloed, Jan D.H.
Mueller, Joerg P.
Van Dijl, Jan M.

<120> Twin-Arginine Translocation in Bacillus

<130> GC634-2

<140> US 09/954,737
<141> 2001-09-17

<150> US 60/233,610
<151> 2000-09-18

<160> 29

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<212> PRT
<213> Escherichia coli

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Val Leu Leu Phe Gly Thr Lys Lys Leu Gly Ser Ile Gly Ser Asp Leu
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Gly Ala Ser Ile Lys Gly Phe Lys Lys Ala Met Ser Asp Asp Glu Pro
35 40 45
Lys Gln Asp Lys Thr Ser Gln Asp Ala Asp Phe Thr Ala Lys Thr Ile
50 55 60
Ala Asp Lys Gln Ala Asp Thr Asn Gln Glu Gln Ala Lys Thr Glu Asp
65 70 75 80
Ala Lys Arg His Asp Lys Glu Gln Val
85

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<211> 67

<212> PRT
<213> Escherichia coli

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Val Leu Leu Phe Gly Thr Lys Lys Leu Arg Thr Leu Gly Gly Asp Leu
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Gly Ala Ala Ile Lys Gly Phe Lys Lys Ala Met Asn Asp Asp Asp Ala
35 40 45
Ala Ala Lys Lys Gly Ala Asp Val Asp Leu Gln Ala Glu Lys Leu Ser
50 55 60
His Lys Glu

<210> 3

<211> 57
<212> PRT
<213> *Bacillus subtilis*

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Met Pro Ile Gly Pro Gly Ser Leu Ala Val Ile Ala Ile Val Ala Leu
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Ile Ile Phe Gly Pro Lys Lys Leu Pro Glu Leu Gly Lys Ala Ala Gly
20 25 30
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35 40 45
Glu Glu Glu Lys Lys Glu Asp Gln
50 55

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<213> *Bacillus subtilis*

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Ala Ile Ile Ile Phe Gly Pro Ser Lys Leu Pro Glu Ile Gly Arg Ala
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Ala Lys Arg Thr Leu Leu Glu Phe Lys Ser Ala Thr Lys Ser Leu Val
35 40 45
Ser Gly Asp Glu Lys Glu Glu Lys Ser Ala Glu Leu Thr Ala Val Lys
50 55 60
Gln Asp Lys Asn Ala Gly
65 70

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<212> PRT
<213> *Bacillus subtilis*

<400> 5
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Leu Val Phe Gly Pro Asp Lys Leu Pro Ala Leu Gly Arg Ala Ala Gly
20 25 30
Lys Ala Leu Ser Glu Phe Lys Gln Ala Thr Ser Gly Leu Thr Gln Asp
35 40 45
Ile Arg Lys Asn Asp Ser Glu Asn Lys Glu Asp Lys Gln Met
50 55 60

<210> 6
<211> 171
<212> PRT
<213> *Escherichia coli*

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20 25 30
Ala Gly Trp Ile Arg Ala Leu Arg Ser Leu Ala Thr Thr Val Gln Asn
35 40 45
Glu Leu Thr Gln Glu Leu Lys Leu Gln Glu Phe Gln Asp Ser Leu Lys
50 55 60

Lys Val Glu Lys Ala Ser Leu Thr Asn Leu Thr Pro Glu Leu Lys Ala
65 70 75 80
Ser Met Asp Glu Leu Arg Gln Ala Ala Glu Ser Met Lys Arg Ser Tyr
85 90 95
Val Ala Asn Asp Pro Glu Lys Ala Ser Asp Glu Ala His Thr Ile His
100 105 110
Asn Pro Val Val Lys Asp Asn Glu Ala Ala His Glu Gly Val Thr Pro
115 120 125
Ala Ala Ala Gln Thr Gln Ala Ser Ser Pro Glu Gln Lys Pro Glu Thr
130 135 140
Thr Pro Glu Pro Val Val Lys Pro Ala Ala Asp Ala Glu Pro Lys Thr
145 150 155 160
Ala Ala Pro Ser Pro Ser Ser Asp Lys Pro
165 170

Q16
<210> 7
<211> 258
<212> PRT
<213> Escherichia coli

<400> 7
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Arg Lys Arg Leu Leu Asn Cys Ile Ile Ala Val Ile Val Ile Phe Leu
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Cys Leu Val Tyr Phe Ala Asn Asp Ile Tyr His Leu Val Ser Ala Pro
35 40 45
Leu Ile Lys Gln Leu Pro Gln Gly Ser Thr Met Ile Ala Thr Asp Val
50 55 60
Ala Ser Pro Phe Phe Thr Pro Ile Lys Leu Thr Phe Met Val Ser Leu
65 70 75 80
Ile Leu Ser Ala Pro Val Ile Leu Tyr Gln Val Trp Ala Phe Ile Ala
85 90 95
Pro Ala Leu Tyr Lys His Glu Arg Arg Leu Val Val Pro Leu Leu Val
100 105 110
Ser Ser Ser Leu Leu Phe Tyr Ile Gly Met Ala Phe Ala Tyr Phe Val
115 120 125
Val Phe Pro Leu Ala Phe Gly Phe Leu Ala Asn Thr Ala Pro Glu Gly
130 135 140
Val Gln Val Ser Thr Asp Ile Ala Ser Tyr Leu Ser Phe Val Met Ala
145 150 155 160
Leu Phe Met Ala Phe Gly Val Ser Phe Glu Val Pro Val Ala Ile Val
165 170 175
Leu Leu Cys Trp Met Gly Ile Thr Ser Pro Glu Asp Leu Arg Lys Lys
180 185 190
Arg Pro Tyr Val Leu Val Gly Ala Phe Val Val Gly Met Leu Leu Thr
195 200 205
Pro Pro Asp Val Phe Ser Gln Thr Leu Leu Ala Ile Pro Met Tyr Cys
210 215 220
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245 250 255
Glu Glu

<210> 8
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<212> PRT
<213> Bacillus subtilis

Q16

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Phe Ile Ala Gly Phe Phe Leu Ala Lys Pro Ile Ile Val Tyr Leu Gln
35 40 45
Glu Thr Asp Glu Ala Lys Gln Leu Thr Leu Asn Ala Phe Asn Leu Thr
50 55 60
Asp Pro Leu Tyr Val Phe Met Gln Phe Ala Phe Ile Ile Gly Ile Val
65 70 75 80
Leu Thr Ser Pro Val Ile Leu Tyr Gln Leu Trp Ala Phe Val Ser Pro
85 90 95
Gly Leu Tyr Glu Lys Glu Arg Lys Val Thr Leu Ser Tyr Ile Pro Val
100 105 110
Ser Ile Leu Leu Phe Leu Ala Gly Leu Ser Phe Ser Tyr Tyr Ile Leu
115 120 125
Phe Pro Phe Val Val Asp Phe Met Lys Arg Ile Ser Gln Asp Leu Asn
130 135 140
Val Asn Gln Val Ile Gly Ile Asn Glu Tyr Phe His Phe Leu Leu Gln
145 150 155 160
Leu Thr Ile Pro Phe Gly Leu Leu Phe Gln Met Pro Val Ile Leu Met
165 170 175
Phe Leu Thr Arg Leu Gly Ile Val Thr Pro Met Phe Leu Ala Lys Ile
180 185 190
Arg Lys Tyr Ala Tyr Phe Thr Leu Leu Val Ile Ala Ala Leu Ile Thr
195 200 205
Pro Pro Glu Leu Leu Ser His Met Met Val Thr Val Pro Leu Leu Ile
210 215 220
Leu Tyr Glu Ile Ser Ile Leu Ile Ser Lys Ala Ala Tyr Arg Lys Ala
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Gln Lys Ser Ser Ala Ala Asp Arg Asp Val Ser Ser Gly Gln
245 250

<210> 9
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<212> PRT
<213> Bacillus subtilis

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20 25 30
Ala Phe Leu Phe Val Gln Asp Ile Tyr Asp Trp Leu Ile Arg Asp Leu
35 40 45
Asp Gly Lys Leu Ala Val Leu Gly Pro Ser Glu Ile Leu Trp Val Tyr
50 55 60
Met Met Leu Ser Gly Ile Cys Ala Ile Ala Ala Ser Ile Pro Val Ala
65 70 75 80
Ala Tyr Gln Leu Trp Arg Phe Val Ala Pro Ala Leu Thr Lys Thr Glu
85 90 95
Arg Lys Val Thr Ile Met Tyr Ile Met Tyr Ile Pro Gly Leu Phe Ala
100 105 110
Leu Phe Leu Ala Gly Ile Ser Phe Gly Tyr Phe Val Leu Phe Pro Ile
115 120 125
Val Leu Ser Phe Leu Thr His Leu Ser Ser Gly His Phe Glu Thr Met
130 135 140
Phe Thr Ala Asp Arg Tyr Phe Arg Phe Met Val Asn Leu Ser Leu Pro

145 150 155 160
Phe Gly Phe Leu Phe Glu Met Pro Leu Val Val Met Phe Leu Thr Arg
165 170 175
Leu Gly Ile Leu Asn Pro Tyr Arg Leu Ala Lys Ala Arg Lys Leu Ser
180 185 190
Tyr Phe Leu Ile Val Val Ser Ile Leu Ile Thr Pro Pro Asp Phe
195 200 205
Ile Ser Asp Phe Leu Val Met Ile Pro Leu Leu Val Leu Phe Glu Val
210 215 220
Ser Val Thr Leu Ser Ala Phe Val Tyr Lys Lys Arg Met Arg Glu Glu
225 230 235 240
Thr Ala Ala Ala Ala
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<210> 10
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<212> PRT
<213> *Bacillus alcalophilus*

G16
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Met Gly Gly Leu Ser Val Gly Ser Val Val Leu Ile Ala Leu Val Ala
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20 25 30
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35 40 45
Asp Asp Asp Asp Thr Lys Ser Thr Asn Val Gln Lys Glu Lys Ala
50 55 60

<210> 11
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<212> PRT
<213> *Bacillus alcalophilus*

<400> 11
Met Thr Met Met Thr Pro Asn Gln Gln Thr Ser Lys Lys Lys Arg
1 5 10 15
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20 25 30
His Ala Glu Glu Leu Arg Arg Arg Ile Phe Val Val Leu Ala Phe Phe
35 40 45
Ile Val Ala Leu Ile Gly Gly Phe Phe Leu Ala Val Pro Val Ile Thr
50 55 60
Phe Leu Gln Asn Ser Pro Gln Ala Ala Asp Met Pro Phe Asn Ala Phe
65 70 75 80
Arg Leu Thr Asp Pro Leu Arg Val Tyr Met Asn Phe Ala Val Ile Thr
85 90 95
Ala Leu Val Leu Ile Ile Pro Val Ile Leu Tyr Gln Leu Trp Ala Phe
100 105 110
Val Ser Pro Gly Leu Lys Glu Asn Glu Gln Lys Ala Thr Leu Ala Tyr
115 120 125
Ile Pro Ile Ala Phe Leu Leu Phe Leu Ala Gly Ile Ala Phe Ser Tyr
130 135 140
Phe Ile Leu Leu Pro Phe Val Ile Ser Phe Met Gly Gln Met Ala Asp
145 150 155 160
Arg Leu Glu Ile Asn Glu Met Tyr Gly Ile Asn Glu Tyr Phe Ser Phe
165 170 175
Leu Phe Gln Leu Thr Ile Pro Phe Gly Leu Leu Phe Gln Leu Pro Val
180 185 190
Val Val Met Phe Leu Thr Arg Leu Gly Val Val Thr Pro Thr Phe Leu

195 200 205
Arg Lys Ile Arg Lys Tyr Ala Tyr Phe Ala Leu Leu Val Ile Ala Gly
210 215 220
Ile Ile Thr Pro Pro Glu Leu Thr Ser His Leu Phe Val Thr Val Pro
225 230 235 240
Met Leu Ile Leu Tyr Glu Ile Ser Ile Thr Ile Ser Ala Ile Thr Tyr
245 250 255
Arg Lys Tyr His Gly Thr Thr Asp His Asn Gly Gln Glu Ser Ala Lys
260 265 270

<210> 12
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<213> Artificial Sequence

<220>
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35

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<220>
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<400> 13
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26

<210> 14
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<212> DNA
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<220>
<223> primer

<400> 14
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<220>

A16

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Al⁶

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caaggatccc gaattaagga gtgg 24

<210> 29
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Q16
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